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A Plan to Transfer Low-Cost Loblolly Pine Management Technology to Appropriate Users

In cooperation with the Southern and
Southeastern Forest Experiment Stations

United States
Department of
Agriculture

Forest Service

**Southern
Region**

Forestry
Report
R8-FR-20
December 1990

United States Department of Agriculture
Forest Service
Regional Office
1720 Peachtree Rd., NW
Atlanta, GA 30367

Reply to: 1320

Date: July 25, 1990

Dear Reader:

We invite you to take a few minutes and read this publication. It documents the input of over seventy-five persons representing forty-two organizations who addressed a vitally important southern forestry question: How can low-cost loblolly pine management technology be transferred to appropriate users?

Forest managers and landowners need a variety of management alternatives to make site specific, environmentally sound selections. Many are looking for low-cost alternatives.

As research continues its quest for new information, we must not lose sight of the gains to be realized from better use of the knowledge we already have. This technology transfer initiative is designed to make this information available to those who can use it.

Several noteworthy features are in this technology transfer plan. A special effort is made to get the technology to limited-resource landowners who often are not linked with normal communications channels. We support this approach as it focuses on this special group through the 1890 Land Grant Colleges and Universities.

Additionally, we are encouraged by the cooperative efforts from the many different organizations participating in this initiative. The job is just too large and important for one organization to handle alone. Collectively, some real progress can be achieved.

The plan described in this booklet is only the beginning. Technology transfer is a dynanmic process. If you see opportunities that should have been included, contact James Baker (501)367-3464, David Bramlett (912)744-0261, or Roger Dennington (404)347-7205 in our organizations. They would be glad to hear your ideas and make you a member of the technology transfer team.

Sincerely,

Thomas H. Ellis
THOMAS H. ELLIS
Director
SOFES

John E. Alcock
JOHN E. ALCOCK
Regional Forester
Southern Region

J. Lamar Beasley
J. LAMAR BEASLEY
Director
SEFES

A Plan to Transfer Low-Cost Loblolly Pine Management Technology to Appropriate Users

Technology serves society when it is made available and put to use. The process of transferring technology from the research laboratory to users is both essential and challenging. These pages document such an important and challenging effort. This technology transfer, the application of scientific knowledge to practical purposes, is intended to help solve one of the South's most pressing forestry problems: *declining forest growth and productivity on nonindustrial private forest lands.* The solution: *low-cost management alternatives for loblolly pine.*

The productivity of the South's forests is vital to the region's economy and quality of life of its citizens. In 1984, the value of timber harvested ranked this resource among the top three agricultural crops in all 12 southern states. It was first in value in six states. After rising for decades, the net annual growth for both softwood and hardwood forests in the South has begun to decline. This decline has been due to several factors, some of which are documented in the report "The South's Fourth Forest: Opportunities to Increase the Resource Wealth of the South."[1]

Research has developed the technology, but it serves no one until it is effectively transferred to the users.

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[1] U.S. Department of Agriculture, Forest Service. 1988. The South's fourth forest: opportunities to increase the resource wealth of the South. Misc. Publ. 1461. Washington, DC: U.S. Department of Agriculture. 28 p.

Introduction

During the last two and a half decades, timber harvest in the South has increased rapidly to help meet the nation's expanding need for wood products. As a result, softwood timber harvest volumes now exceed annual growth over large areas of the South. The failure of the owners to adequately regenerate pine stands after harvest on much of their nonindustrial private forest land has contributed significiantly to this undesirable trend. Earlier studies have found that many of the forest landowners who failed to reforest after harvest did so because they assumed, among other things, that the site would reforest itself or that reforestation costs were too high. Low-cost regeneration and management alternatives developed by research thus provide a particularly important incentive to these owners.

By far, the greatest opportunities to raise the South's forest productivity rest with the nonindustrial private forest owners. They own much of the southern forest land (122 million of 182 million acres, or 67 percent), and generally their properties are further from meeting the inherent productive capacity of the land than are other forest properties.

Loblolly pine is the most abundant of the southern pines, accounting for 50 percent of all yellow pine volume in the South. Its silvical characteristics make it well suited for low-cost natural regeneration and management.

These facts become the basis for solving a major southern forestry problem: declining forest growth and productivity occurring mostly on nonindustrial private forest lands. This problem can often be solved by linking low-cost management alternatives with loblolly pine regeneration and management.

"Most of us landowners are unable or unwilling to make large per acre investments in forest management, but are more inclined to use low-cost alternatives when we understand their availability and effectiveness."

Jim Francis, 1980 Southern Regional Tree Farmer of the Year.

The Technology: What is Being Transferred?

A number of basic management messages have developed from many years of research and have been documented in a large number of publications. The following messages serve as headlines to provide technology transfer agents with a common understanding of the technology.

1. Natural, low-cost regeneration methods are available that result in productive, even-aged stands.

2. Cut-over stands with residual stocking can often be rehabilitated at low cost.

3. The selection system has been developed as an alternative for those who want the advantages of uneven-aged stands.

4. Several effective methods have been developed to control competing vegetation. Method selection should be based on a site-specific prescription.

5. Growth and yield models for natural stands in the West-Gulf Region are available to help managers predict outputs and plan management strategies.

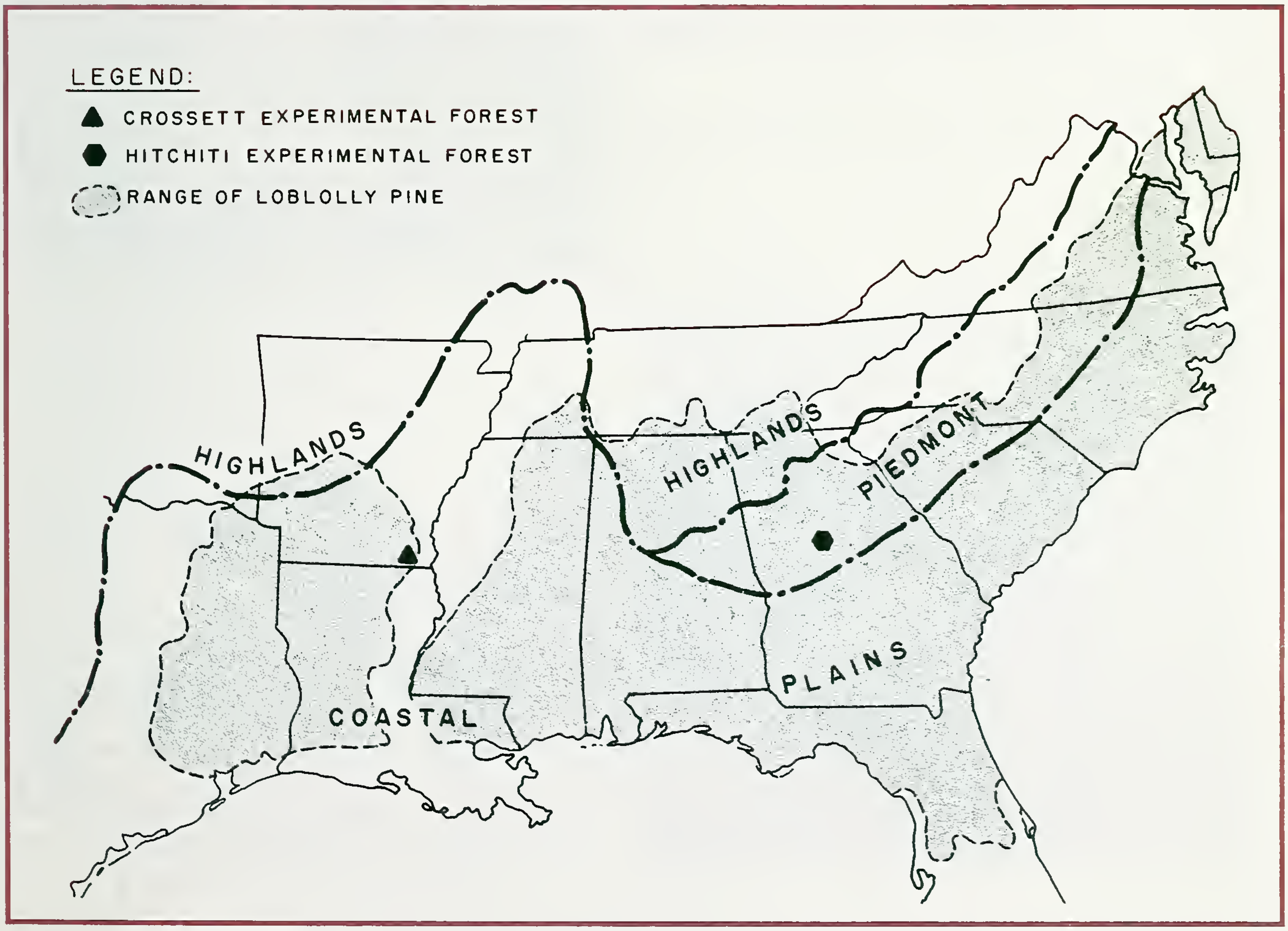
6. Quick and effective methods of artificial regeneration are available that produce high-yield forests.

7. Seed source information and applied tree-improvement research will increase productivity from planted and naturally regenerated stands.

Research, validated and supplemented with operational experiences, developed the technology to be transferred through this plan. The research responsible for this technology comes mainly from work done at the Crossett Experimental Forest in the Coastal Plains of southeast Arkansas and at the Hitchiti Experimental Forest in the Piedmont of central Georgia.

The Crossett Experimental Forest is a research facility of the Forest Service, U.S. Department of Agriculture, Southern Forest Experiment Station. The Hitchiti Experimental Forest is a similar research facility administered by the Forest Service Southeastern Forest Experiment Station.

Locations where the loblolly pine management technology has been developed.



Both experimental forests have long and distinguished histories. The Crossett Experimental Forest was established in 1933 under R.R. Reynolds' leadership. Reynolds and many coworkers conducted research on the forest for over 30 years. The Hitchiti Experimental Forest was established in 1939. In 1946, Ernst V. Brender was put in charge of the Hitchiti and continued his work there for the next 29 years.

The Crossett Demonstration Forest is located on the Crossett Experimental Forest. Demonstration plots on and around the Hitchiti Experimental Forest are designated as the Brender Demonstration Forest.

The Crossett Experimental Forest is administered by a cadre of scientists headquartered at Monticello, AR. Scientists located at Macon, GA, administer the Hitchiti Experimental Forest.

Since 1980 the scientists at these two locations have published over 270 papers reporting the results of their studies. Currently, they have over 100 studies underway that will supplement existing knowledge. The Crossett and Hitchiti Experimental Forests have been designated as Demonstration Forests in order to enhance the transfer of technology that has developed over the years.

R. R. "Russ" Reynolds, Researcher at Crossett Experimental Forest, 1933 to 1969.

Ernst Brender, Researcher at the Hitchiti Experimental Forest, 1946 to 1975.

Cradles from which much of the low-cost loblolly pine management originated.

Management Technology	**Location**	
Regeneration and management of natural even-aged stands	*	*
Uneven-aged stand management	*	*
Recovery and rehabilitation of understocked stands	*	
Competition control methods	*	*
Growth and yield of natural stands	*	
Seed sources and rust resistance		*

This technology transfer initiative focuses on the loblolly pine and loblolly-shortleaf pine forest types, but the main emphasis is on loblolly pine. Both Coastal Plains and Piedmont conditions are covered because of the locations of the two experimental forests, where scientists have identified the nonindustrial, private forest landowners as their primary user group.

Tree-improvement technology, a major research effort in the research unit at Macon, GA, is generally associated with intensive and costly forest management alternatives. Some fundamental tree-improvement principles are important to low-cost forest management alternatives and will be included where appropriate in this technology initiative. They are:

- Select the genetically best trees for seed trees in natural regeneration methods.
- Use artificial regeneration methods when seed tree candidates are genetically unacceptable.
- Match the proper source of seed to the site when using artificial regeneration methods.

Some of this technology was developed recently, while some goes back several years when scientists such as Reynolds and Brender were active.

Just because technology is old does not necessarily mean it is out of date. Some of the best and most current information on natural regeneration of southern pines comes from research that was initiated three or four decades ago. This information should be made available to new generations of landowners and resource managers now operating without adequate knowledge of either the old or the new technology.

Audiences: Who Needs This Information?

The audiences, or potential users of this technology, have been identified so that transfer activities can be specifically developed and directed. The transfer of this information can be targeted to one of two groups: foresters or nonforesters. The foresters include those employed by state forestry agencies, the Cooperative Extension Service, the Soil Conservation Service, national forests, consulting firms, forest industry, and faculty and students of forestry schools.

Nonforesters include nonindustrial private forest land owners, extension agents, Soil Conservation Service district conservationists, the leaders and members of special interest environmental groups, 1890 Land Grant Colleges and Universities' liaison officers, limited resource landowners, nursery managers, State legislators, middle managers in the Cooperative Extension Service and Soil Conservation Service, and other national forest professionals such as landscape architects, wildlife biologists, and hydrologists.

Lynn Hooven, Forest Management Chief, Georgia Forestry Commission.

"Our foresters are often called on for management advice on cut-over lands with low residual loblolly pine stocking. Rehabilitation and management of these stands using the residual stocking is a good low-cost alternative for many landowners."

L. Keville Larson, President, Larson & McGowin Forest Managers & Consultants, Inc.

"Using low-cost alternatives to manage and perpetuate natural stands may be the best investment in forestry."

Objectives: What Are the Expected Results?

This initiative is designed to increase the productive acres and stocking levels of loblolly pine forests in the South.

More specific objectives are to:

- Increase the 1995 loblolly pine acreage by 2 percent over the 1990 acreage.
- Improve pine stocking levels on 100,000 acres by 1995.
- Present the technology to a large number of potential users in such a fashion that 25 percent will modify their management practices and increase productivity on their properties.

Special Opportunities: What Can Be Done?

Many landowners with limited resources are not linked with the normal technology transfer networks. Consequently, they often fail to receive the information that they can use to make their forest properties more productive. Additionally, because of historical socioeconomic influences, they may be skeptical of information from the traditional technology transfer media.

This plan will focus special efforts on these landowners. The 1890 Land Grant Colleges and Universities have USDA liaison officers and resources that can channel this special focus. Five USDA/1890 liaison officers who are members of the technology transfer team addressed the following question: *What action or strategies should be taken to effectively transfer research results to minority and limited-resource landowners?* Their response is summarized in the following recommendations:

1. Train local foresters to work with minority and limited resource landowners.

2. Provide personnel in 1890 Land Grant institutions with forest technology education and training that should be disseminated to technicians employed by the 1890 Extension Farm Opportunities Program.

3. In cooperation with other resource agencies, establish research demonstration plots at 1890 Land Grant institutions and on minority farms.

4. Invite representative minority landowners/representatives to demonstration forests where they may see what technology is applicable to their situations.

James Williams, USDA Liaison Officer, South Carolina State College.

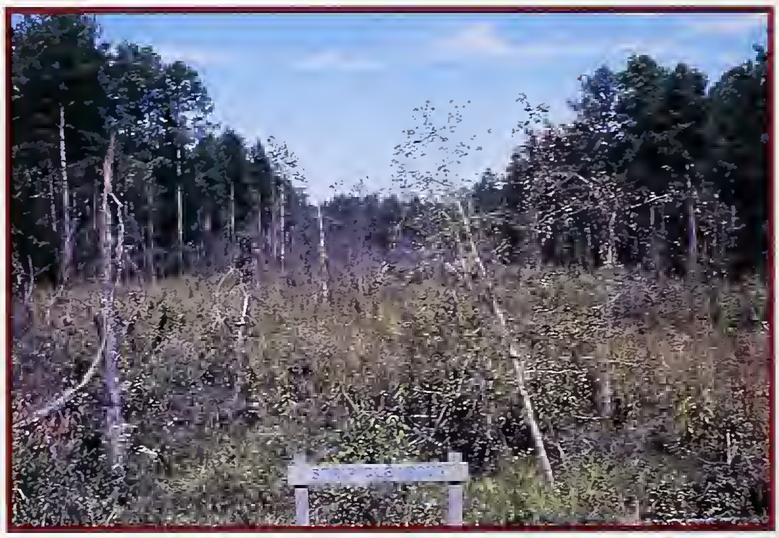
"This low-cost forest management technology is well suited for limited resource landowners, but special efforts are needed to transfer it to them."

Evaluation: We Need to Know How We Did

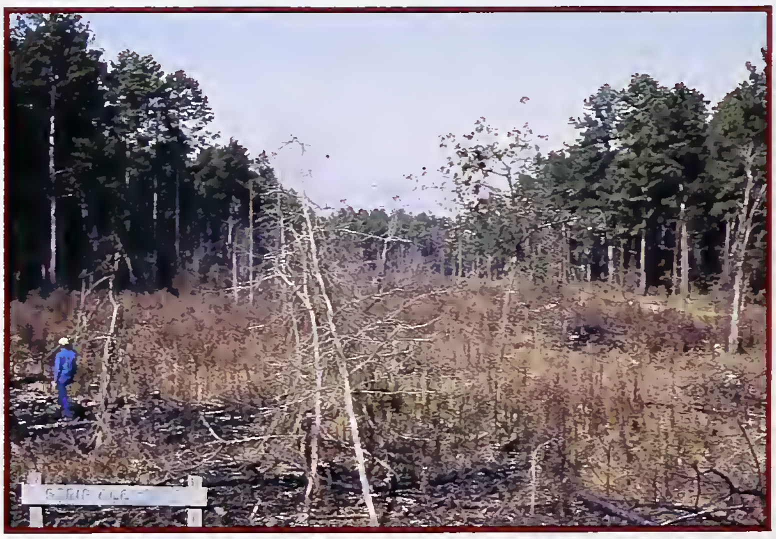
Each lead person or persons involved in the tasks to implement this information will develop a list of names and addresses of people who participate. From those lists a survey/study will be conducted in 1994 to determine how many users have been positively influenced.

This technology transfer initiative will also be evaluated by comparing the acreage and stocking data reported in "The South's Fourth Forest..." with forest survey data that will be reported in 1996.

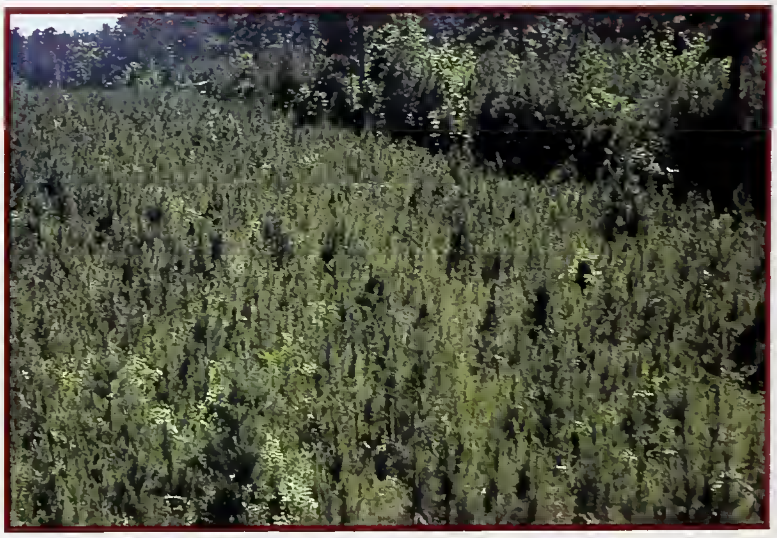
After harvest—before prescribed burn.



After prescribed burn.



Four years later.



Strip clearcuts with seeding from adjacent stands will produce acceptable stocking at low cost when the technology is conducted properly.

The Technology Transfer Team: Thinkers and Doers

This action plan was developed by a large and diverse group of individuals who have a unique knowledge of and contact with the technology and the potential users. Such a team is needed in view of the diversity and size of the potential user groups.

Individuals and organizations unable to participate in this initial planned effort are encouraged to seek ways they can contribute. Contact one of the research project leaders or the technology transfer team leader if you want to participate.

The Alabama Cooperative Extension Service
AUBURN UNIVERSITY

Bob Jones

University of Arkansas
Cooperative Extension Service

Larry Willett

FLORIDA
DEPARTMENT OF AGRICULTURE & CONSUMER SERVICES
DIVISION OF FORESTRY

Billy Helm

Alabama Farmers Federation

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ARKANSAS FORESTRY COMMISSION

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Clifton E. Peters—Alcorn State University
Jim Reaves—Alabama A&M University
Michael Washington—North Carolina A&T State University
James Williams—South Carolina State College

Jim Abercrombie—Sumter National Forest
Jim Baker—Southern Forest Experiment Station
R. C. Biesterfeldt—Southeastern Forest Experiment Station
David Bramlett—Southeastern Forest Experiment Station
Rod Busby—Southern Forest Experiment Station
Roger W. Dennington, Team Leader—Southern Region
Boyd Edwards—Southeastern Forest Experiment Station
Earle Jones—Southeastern Forest Experiment Station
Marta E. Knowlton—Southern Forest Experiment Station
Samuel Larry—Southern Region
Ron Lindenboom—Southern Region
Tom Lloyd—Southeastern Forest Experiment Station
Paul Murphy—Southern Forest Experiment Station
Mike Shelton—Southern Forest Experiment Station
Bill Siegel—Southern Forest Experiment Station
Gene Sirmon—National Forests in Mississippi
Earl R. Sluder—Southeastern Forest Experiment Station
O. D. Smith—Ozark-St. Francis National Forest
John R. Vann—Southern Region
Dale Wade—Southeastern Forest Experiment Station
William D. Walker—Ouachita National Forest
Wenard Weaver—Daniel Boone National Forest
Gerald Wicker—Southern Region

SOIL CONSERVATION SERVICE

Kelly M. Koonce—Arkansas
Don Lawrence—Louisiana
Loring McIntyre—North Carolina
James L. Robinson—Southern Region
Norman W. Runge—South Carolina
Carl V. Thompson—Louisiana
Gary Tyre—Georgia

School of Forestry & Wildlife

Bob McElwee

The Action Plan: Our 5-Year Strategy

The plan lists tasks suggested by the team members as the most appropriate to effectively transfer the technology to various user groups. Lead persons are identified who will take the overall responsibility to see that the tasks are initiated and properly conducted. Additional persons may be invited to help implement the tasks as the lead person(s) deems appropriate. The tasks are grouped by the seven key messages presented earlier in this plan. The cost of most tasks can be absorbed through the transfer agents' normal program of work and budget. Some opportunities will require special funding beyond what is available in normal program budgets and are indicated in the action plan.

Audience Code	
Foresters	**Nonforesters**
1 - State	A - Nonindustrial Private Forest Landowners
2 - Extension	B - Extension Agents
3 - Soil Conservation Service	C - Soil Conservation Service District Conservationist
4 - National Forest	D - Environmental Special Interest Groups
5 - Consulting	E - Limited Resource Landowners
6 - Industry-Management Assistant	F - USDA/1890-Liaison Officers
7 - Industry-Company Lands	G - Nursery Managers
8 - Forestry School Faculty	H. - State Legislators
9 - Forestry School Students	I - Extension and Soil Conservation Service Middle Managers
	J - National Forest Professionals

MESSAGE 1.—Natural low-cost regeneration methods are available that result in productive even-aged stands

Audiences	Tasks	Lead Person(s)	Date
8	Encourage forestry school deans to strengthen natural stand management alternatives in school curriculums	Roger Dennington	1990
2, B	Catalog available public service announcements (PSA's) on natural regeneration and make available to forestry leaders	James Neal	1990
1-9	Compile and distribute a bibliography on natural regeneration alternatives	David Moorhead James Neal Tommy Loggins H. Allen Thomas	1990
1, B-C	Incorporate natural regeneration technology into in-house training for state forestry agencies, Extension Service and Soil Conservation Service in the States of AL, AR, FL, GA, LA, MS, NC, OK, SC, TN, TX, and VA	James Neal James Robinson Roger Dennington Management Chiefs Extension Forestry Leaders SCS Foresters	1990–95
1-9 A-F	Develop a publication which illustrates the multibenefits of natural regeneration	Robert Biesterfeldt Boyd Edwards Phillip Dougherty James Baker	1991 ($4000)*
A, B, E	Produce new PSA's on low-cost natural-stand management alternatives	James Neal	1991
B-C	Develop fact sheets on low-cost management alternatives	James Neal James Robinson	1991
1	Conduct a low-cost management workshop for State district foresters and service foresters	James Baker R.F. Kennedy Roger Dennington Larry Willett	1991
1-9 A, C E, F, I	Develop and distribute better economic cost-return analysis models, comparing natural regeneration with more intensive regeneration methods Analysis Models	Todd Hepp Frederick Cubbage Coleman Dangerfield Ralph Alig Paul Murphy Clair Redmond	 1991 1993
1-9 A-F	Develop a training video on even-aged natural regeneration systems	Boyd Edwards David Moorhead Lynn Hooven James Baker	1992 ($10,000)*
A-C E	Prepare a slide-tape program on low-cost management alternatives	Larry Willett	1992

*Special funding required

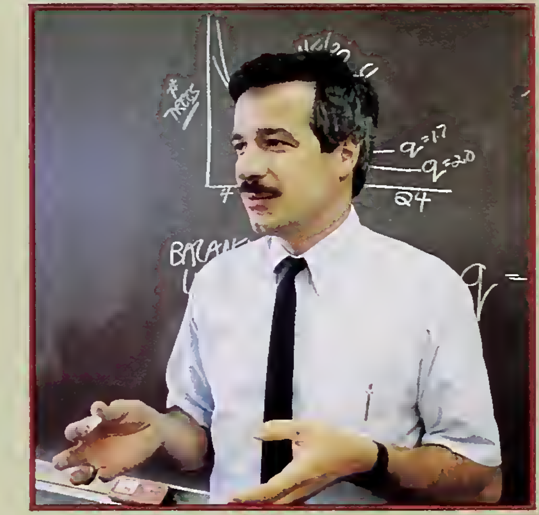
Jim Neal, Regional Forester, Cooperative Extension Service.

"The Cooperative Extension Service can and will play a major role in getting this important technology transferred to appropriate user groups."

MESSAGE 1.—Natural low-cost regeneration methods are available that result in productive even-aged stands—Continued

Audiences	Tasks	Lead Person(s)	Date
I	Conduct a workshop on low-cost forest management alternatives at the Crossett EF	James Baker Larry Willett	1992
1-8 A-E	Develop a loblolly pine seed crop reporting service	Earle Jones	1992
H	Conduct a workshop on low-cost management alternatives at the Brender DF	Lynn Hooven Nathan McClure Earle Jones	1992
8	Conduct a low-cost management workshop at Crossett EF	Larry Willett James Baker	1992
1-9 A-J	Develop a video conference on low-cost management alternatives modeled after Oklahoma video conferences	James Neal Steven Anderson	1992–93 ($15,000)*
1-9	Prepare a looseleaf notebook of research papers published on low-cost management methods	Roger Dennington	1993
1-9	Prepare a comprehensive textbook-manual (modeled after the Herbicide Application Manual) on low-cost management alternatives	James Baker	1994
	Prepare these publications that will report the latest research findings:		
1-9	*Ten-year results of even-aged regulation by blocks, strip and ribbon clearcutting*	James Baker	1991
1-9	*Fifty-year results of four reproduction cutting methods*	James Baker	1992
1-9	*Regeneration of shortleaf pine and pine-hardwood mixtures in the Ouachita Highlands using the shelterwood method*	Michael Shelton	1995

*Special funding required



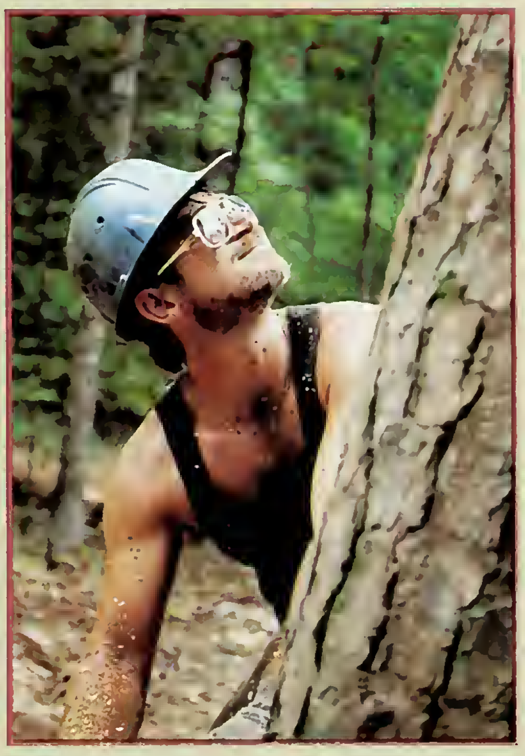
Mike Messina, Assistant Professor of Forestry, Texas A&M University.

"Low-cost is often synonymous with low-impact forestry and is becoming an increasingly important part of a forestry student's education in light of our society's evolving environmental values."

MESSAGE 2.—Cut-over stands with residual stocking can often be rehabilitated at low cost

Audiences	Tasks	Lead Person(s)	Date
1-9 A-F	Prepare and distribute a lesson plan on the recovery and management of understocked stands	Roger Dennington James Baker	1992 ($200)*
	Prepare and distribute these technical publications:		
1-9	*Ten-year results of the rehabilitation and development of understocked loblolly-shortleaf pine stands*	James Baker	1991
1-9	*Five-year results of the rehabilitation and management of understocked seedling and sapling pine and pine-hardwood stands*	James Baker	1991
1-9	*Ten-year results of the recovery and growth of oppressed trees following release*	James Baker	1991
1-9	*Five-year results of the rehabilitation and management of pine and pine-hardwood stands cut-over 15 years previously*	James Baker	1992
1-9	*Early results of loblolly pine release in minimally stocked Piedmont stands*	Earle Jones	1993
1-9	*Summary of the rehabilitation and management of understocked pine and hardwood stands in the Coastal Plains of Arkansas*	James Baker Michael Shelton	1994

*Special funding required



Timber harvesting generates more income than any other southern crop. Low-cost reforestation investments will insure that future harvests are possible.

MESSAGE 3.—The selection system has been developed as an alternative for those who want the advantages of uneven-aged stands

Audiences	Tasks	Lead Person(s)	Date
1-9 D	Organize and conduct a regional symposium on uneven-aged management	James Baker Roger Dennington	1991
4, J	Provide comprehensive uneven-aged management training for Chattahoochee-Oconee National Forest staff	James Guldin	1991
	Prepare and distribute these technical publication:		
1-9 A-F I, J	*Uneven-aged management guidelines for loblolly-shortleaf pines*	James Baker and Staff	1991
1-9	*Five decades of uneven-aged-management on the Crossett Farm Forties*	James Baker	1992
1-9	*Uneven-aged management of shortleaf pine and pine-hardwood mixtures on the Ouachita and Homochitto NF*	Michael Shelton	1994
D	Hold a seminar on uneven-aged management for leaders and members of environmental special interest groups	Larry Willett James Baker	1992
1-9	Organize and conduct a national symposium on uneven-aged management	Paul Murphy James Baker	1992
1-9 A-F	Prepare and distribute a lesson plan addressing selection management for uneven-aged stands	Roger Dennington James Baker	1993

Advance planning and implementation of existing technology is needed to capture the inexpensive contributions of nature.

MESSAGE-4.—Several effective methods have been developed to control competing vegetation. Method selection should be based on a site-specific prescription

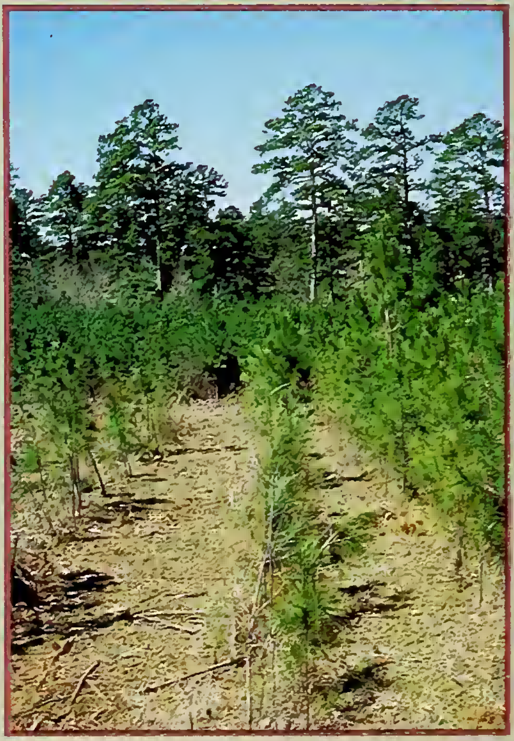
Audiences	Tasks	Lead Person(s)	Date
1-9 A-F	Develop and execute a strategy to widely circulate the revised publication, "A Guide for Prescribed Fire in Southern Forests"	Dale Wade James Lunsford	1990
1-9	Develop, maintain, and distribute a directory of currently available teaching aids on vegetative management	James Neal	1990–95 ($500)*
1-9	Prepare and distribute outlines, lesson plans, resource lists, and training aids for prescribed fire workshops and field tours	Ronald Coats Dale Wade	1990–95
1-9	Prepare and distribute outlines, lesson plans, resource lists, training aids for herbicide workshops and field tours	Boyd Edwards James Miller Larry Nelson	1990
1-9 A,E	Develop and conduct annual, comprehensive, prescribed-fire workshops in each State using the Mississippi experience as a model	State Extension Forestry Leader State Forestry Fire Chief	1991--95
1-9 A-E	Develop and conduct herbicide workshops in each State	State Extension Forestry Leader State Forestry Management Chief	1991–95
1-9 A-F	Prepare and distribute a lesson plan addressing prescribed-fire to control understory vegetation during the growing season	Roger Dennington Dale Wade	1991
	Prepare and distribute these technical publications:		
1-9	*Final report on vegetative control by prescribed fire in mature Piedmont loblolly pine stands*	Dale Wade	1992
1-9	*Early report of loblolly pine natural regeneration on sites having different burning histories in the Piedmont*	Earle Jones	1992
1-9 D, J	*Maintaining red-cockaded woodpecker habitat with fire and herbicides*	Earle Jones	1994

*Special funding required

Southern nonindustrial private forest landowners control nearly 27 percent of the nation's forests. Maintaining the productivity of these forests is in our nation's best interest.

MESSAGE 5.—Growth and yield models for natural stands in the West-Gulf Region are available to help managers predict outputs and plan management strategies

Audiences	Tasks	Lead Person(s)	Date
	Prepare and distribute these technical publications:		
1-9	*A provisional stand-volume table for shortleaf pine in the West-Gulf Region*	Paul Murphy	1990
1-9	*The effects of diameter-limit cutting on uneven-aged loblolly-shortleaf pine stands*	Paul Murphy	1991
1-9	*A 24-year history of volume production of even-aged shortleaf pine stands under different density levels*	Paul Murphy	1992
1-9	*The effect of basal area and burning cycle on merchantable stand development in uneven-aged loblolly-shortleaf pine stands on average sites*	Paul Murphy	1994
1-9	*A regional model for growth and yield of natural even-aged loblolly pine stands in the South*	Robert Farrar Paul Murphy	1994
1-9	*An individual tree growth model for uneven-aged loblolly pine stands in the West-Gulf Coastal Plains*	Paul Murphy	1994
1-9	*An individual tree growth model for even-aged shortleaf pine stands in the West-Gulf Region*	Paul Murphy	1994



Precommercial thinning of over-dense natural loblolly pine stands can more than double merchantable growth.

MESSAGE 6.—Quick and effective methods of artificial regeneration are available that produce high-yield forests

Audiences	Tasks	Lead Person(s)	Date
	Prepare and distribute these technical publications:		
1-9	*Early report of loblolly pine interplanted in the Piedmont*	Earle Jones	1994
1-9	*Loblolly pine plantation establishment after brown-and-burn treatments on clearcut and abandoned sites in the Georgia Piedmont*	Earle Jones	1994

MESSAGE 7.—Seed source information and applied tree-improvement research will increase productivity from planted and naturally regenerated stands

Audiences	Tasks	Lead Person(s)	Date
1-2	Emphasize seed source and applied tree-improvement research when conducting in-house agency training	State Forestry Management Chief State Extension Forestry Leader	1990–95
1-9	Develop a lesson plan for presentations on tree improvement considerations in natural regeneration and other low-cost management situations	Clark Lantz Earl Sluder David Bramlett	1991
1-9 A-C	Prepare and distribute a bulletin on the importance of correctly matching site and loblolly pine seed source	Clark Lantz Earl Sluder	1991
1,G	Develop and present a program stressing the importance of loblolly seed source in Florida	Mary Duryea William Helm	1991

Capitalizing on loblolly pine's inherent ability to reproduce itself naturally may be one of the South's best forestry investments.

MESSAGES 1–7.—These tasks generally address more than one message or technology

Audiences	Tasks	Lead Person(s)	Date
1-3	Conduct a seminar to inform forestry agency personnel how to effectively work with limited resource landowners	USDA/1890 liaisons Otis Jones	1991
F	Provide training on low-cost management alternatives to USDA/1890 liaisons and extension personnel at two 1890 Land Grant institutions	James Baker Earle Jones Thomas Lloyd Roger Dennington	1991
A, E	Develop appropriate low-cost forest management demonstrations on two 1890 Land Grant institutions' forest property	Roger Dennington USDA/1890 liaisons	1990–95
A, E	Conduct annual field days and workshops at 1890 Land Grant institutions using the demonstration areas and low-cost management theme	USDA/1890 liaisons	1991–95
A, E	Invite appropriate forestry officials to speak at 1890 institutions during regular programs or as guest lecturers for special programs	USDA/1890 liaisons	1990–95
E	Make concerted efforts to get limited-resource landowners to field days at the Brender and Crossett EF's	Nathan McClure Larry Willett	1990–95
1-9 A-E	Continue development of Brender DF with emphasis on: •low-cost plantations with improved seedlings, •logging management, •reproductive potential of loblolly pine, •natural regeneration alternatives, •pest management, and •natural stand management	Nathan McClure	1990–95
1-8 B, C, I	Raise the visibility and use of the Brender DF by promoting it with key forestry leaders	Nathan McClure	1991
1-9 A-E	Conduct annual field days at the Brender NF	Nathan McClure	1990–95
1-9 A-E	Conduct annual field days at the Crossett EF	Larry Willett James Baker	1990–95

Annual field days at the experimental forests have historically provided the "seeing is believing" effects of the technology. This is an annual harvest in the late 1950's from the Crossett Experimental Forest's Poor 40.

MESSAGES 1–7.—These tasks generally address more than one message or technology—Continued

Audiences	Tasks	Lead Person(s)	Date
6	Conduct a workshop at the Crossett EF for forest industry management assistance personnel	Roger Dennington James Baker American Forest Council Regional Manager Larry Willett	1991
5	Conduct a workshop at the Crossett EF for consulting foresters	James Baker Larry Willett	1992
5	Conduct a workshop at the Brender DF for consulting foresters	Earle Jones	1992
8-9	Develop and distribute a flyer inviting forestry school classes to visit the Brender DF and Crossett EF	Roger Dennington James Baker David Bramlett	1991
A-C E, I	Encourage and coordinate the establishment of demonstration forests across the loblolly range	James Neal Roger Dennington	1990–95
1-8	Provide training and resources for forestry leaders who will develop demonstration forests	James Neal Roger Dennington Robert Jones	1991
1-9 A-F	Establish demonstration areas on R8/NF's in loblolly-shortleaf pine forest types depicting state-of-the-art management	NF Timber Staff Officers in AL, AR, FL, GA, LA, MS, NC, OK, SC, TX	1991
4	Continue to incorporate new technology into the silviculture certification program	Jimmy Walker	1990–95
1-3 5-8	Publicize availability of the USFS Silviculture Certification Program to non-FS foresters	Jimmy Walker	1990–95
4, J	Invite scientist to present research findings at national forest workshops	Robert Kitchens	1990–95
A, E	Develop a guidebook outlining landowner options for low-cost management of natural and artificial stands	David Bramlett James Baker	1992
A-F	Produce a high-quality color publication that conveys an accurate picture of a forest in various stages of development	Robert Biesterfeldt Boyd Edwards	1992 ($50,000)*

*Special funding required

Demonstration forests play an important role convincing forest landowners and managers which practices are best suited for them.

MESSAGES 1–7.—These tasks generally address more than one message or technology—Continued

Audiences	Tasks	Lead Person(s)	Date
A, E	Develop and distribute a series of nontechnical articles and resources suitable for newsletters, magazines, and newspapers	Marta Knowlton State Forestry Extension Leaders James Neal	1991–95
1-8	Prepare and distribute a list of subject matter experts who are available as speakers, lecturers, etc.	Roger Dennington	1991
1-9	Contact each state SAF Sections's Technical Committee and request that a technical session be developed around the low-cost management theme	Roger Dennington	1991
1-9	Conduct SAF technical sessions requested by local sections	David Bramlett James Baker	1992–95
B, C, I	Encourage extension agents and district conservationists to complete the woodland management correspondence course	James Neal James Robinson	1990
B, C, I	Conduct an interstate tour for key individuals to raise their knowledge level about regeneration and management alternatives	James Neal James Robinson	1991
I	Develop an informational/promotional initiative focused on agency middle managers	James Neal James Robinson	1991
1-9 A-F	Revise and update the Crossett DF Guide	James Baker Roger Dennington	1992
1-3 A-C E	Work with the State Stewardship committees of AL, AR, FL, GA, GA, MS, OK, SC and TX to get the messages of this technology incorporated into the state stewardship plan	Robert Lentz Roger Dennington Bruce Baldwin	1990–95
1-9 A-J	Conduct a survey/study of technology transfer participants to determine the influences of the technology and the effectiveness of the transfer efforts	Frederick Cubbage	1994
	Evaluate acreage and stocking changes since the Fourth Forest Report	SO & SEFES Forest Survey Units Roy Beltz Noel Cost	1996

Maintaining the productivity of forests today will improve the affordability of housing in the future.

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